Name:

Date:

Ch. 2 & 3 Test REVIEW

1. You are currently applying to colleges. Name   
   two categorical variables that you might want to   
   know about a college. (2pts each)
2. Some companies offer 401(k) retirement plans to employees, permitting them to shift part of their before-tax salaries into investments such as mutual funds. Employers typically match 50% of the employees’ contribution up to about 6% of salary. One company, concerned with what it believed was a low employee participation rate in its 401(k) plan, sampled 30 other companies with similar plans and asked for their 401(k) participation rates.   
     
   Who is being investigated? (1pt)
3. What is being investigated? (1pt)
4. Because of the difficulty of weighing a bear in the woods, researchers caught and measured 54 bears, recording their weight, neck size, length, and sex.   
     
   Who/what is the population of this study? (1pt)
5. Who/what is the sample of this study? (1pt)
6. Medical researchers at a large city hospital investigating the impact of prenatal care on newborn health collected data from 882 births during 1998 – 2000. They kept track of the mother’s age, the number of weeks the pregnancy lasted, the type of birth (cesarean, induced, natural), the level of prenatal care the mother had (none, minimal, adequate), the birth weight and sex of the baby, and whether the baby exhibited health problems (none, minor, major).   
     
   Who is being investigated in his study? (1pt)
7. What is being investigated? (1pt)
8. Why is it being investigated? (2pts)
9. When was it being investigated? (1pt)
10. Where was it being investigated? (1pt)
11. Why might this be important? (2pts)
12. How was it being investigated? (1pt)
13. Why might the method of data gathering be important? (2pts)
14. Complete the table below for the variables in the study above. (1/4pt. each)

|  |  |  |
| --- | --- | --- |
| Variable | Categorical or Quantitative? | Units (if quantitative) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. The pie chart below summarizes the genres of 120 first-run movies released in 2005. Is this an appropriate display for the genres? Why or why not? (3pts)
2. The bar chart below summarizes the genres of 120 first-run movies released in 2005. Is this an appropriate display for the genres? Why or why not? (3pts)
3. Is it easier to see the data in the pie chart or the bar chart? Explain. (3pts)
4. The Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)) lists causes of death in the United States:

|  |  |
| --- | --- |
| **Cause of Death** | **Percent** |
| Heart disease | 27.2 |
| Cancer | 23.1 |
| Circulatory diseases and stroke | 6.3 |
| Respiratory diseases | 5.1 |
| Accidents | 4.7 |

Is it reasonable to conclude that heart or respiratory diseases were the cause of approximately 33% of U.S. deaths? (2pts)

1. Why or why not? (3pts)
2. What percent of deaths were from causes not listed here? (2pts)
3. An article in the Winter 2003 issue of *Chance* magazine reported on the Houston Independent School District’s magnet schools programs. Of the 1755 qualified applicants, 931 were accepted, 298 were wait-listed, and 526 were turned away for lack of space. Complete the **relative frequency** table below to show the distribution of the decisions made. (2pts ea)

|  |  |
| --- | --- |
|  |  |
| Accepted |  |
| Wait-Listed |  |
| Turned Away |  |
| Total |  |

1. Write 1 – 2 sentences describing the data. Make sure you are not drawing conclusions from it! (4pts)
2. Data from the International Tanker Owners Pollution Federation Limited ([www.itopf.com](http://www.itopf.com)) give the cause of spillage for 312 large oil tanker accidents from 1974 – 2006. Here is a bar graph:  
     
     
   Would it be appropriate to make a pie chart for these data? Why or why not? (3pts)
3. Summarize the findings of the poll in a few sentences that might appear in a newspaper article. (3pts)
4. The Pew Research Center for the People and the Press (<http://people-press.org>) has asked a representative sample of U.S. adults about global warming, repeating the question over time. In January 2007, the responses reflected an increased belief that global warming is real and due to human activity. Here is a display of the percentages of respondents choosing each of the major alternatives offered.  
     
   List three errors in the display. (2pts each)
5. A survey of autos parked in student and staff lots at a large university classified the brands by country of origin, as seen below:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Driver** | |
| **Origin** |  | Student | Staff |
| American | 107 | 105 |
| European | 33 | 12 |
| Asian | 55 | 47 |

What percent of all cars surveyed were American? (1pt)

1. What percent of American cars were owned by students? (1pt)
2. What percent of the students owned American cars? (2pts)
3. What is the marginal distribution of the drivers? (Write in the table below.) (2pt)

|  |  |
| --- | --- |
| **Driver** | |
| Student | Staff |
|  |  |
|  |  |
|  |  |

1. What is the conditional distribution of car origin for each driver?  
   (Write in the table below.) (2pts)

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Driver** | |
| **Origin** |  | Student | Staff |
| American |  |  |
| European |  |  |
| Asian |  |  |

1. The *Chance* magazine article described in question 16 furthers examined the impact of an applicant’s ethnicity on the likelihood of admission to the Houston Independent School District’ magnet schools program. Those data are summarized in the following table:  
     
   **Admissions Decisions**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Accepted** | **Wait-Listed** | **Turned Away** | **Total** |
| **Black/Hispanic** | 485 | 0 | 32 | 517 |
| **Asian** | 110 | 49 | 133 | 292 |
| **White** | 336 | 251 | 359 | 946 |
| **Total** | 931 | 300 | 524 | 1755 |

Does it appear that the admissions decisions are made independent of the applicant’s ethnicity? Explain. (5pts)